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Building units of oligosaccharides: CVII. Synthesis of modified
oligosaccharides of N-glycoproteins for substrate specificity studies of
N-acetylglucosaminyltransferase II.

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ABSTRACT: Several modified derivatives of the tetrasaccharide
beta-D-GlcNAc-(1 fwdarw 2)-alpha-D-Man-(1 fwdarw 3)-(alpha-D-Man-(1
fwdarw 6))-beta-D-Man-octyl (1) were synthesized for substrate specificity
studies of N-acetylglucosaminyltransferase II (GlcNAcT II). The hydroxyl
groups at C-3, C-4 or C-6 of the alpha(1 fwdarw 6)-linked Man residue and
the hydroxyl groups at C-3 and C-6 of the alpha(1 fwdarw 3)-linked Man
were replaced by deoxy groups. All five tetrasaccharides were synthesized
by a block synthesis by using deoxy saccharide residues. The
trichloroacetimidate method was particularly successful for synthesizing
the glycosidic linkages. The modified compounds have been tested as
substrates for N-acetylglucosaminyltransferase II (GlcNAcT II) from rat
liver. The substrate specificity of GlcNAcT II will be discussed.

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